Amendments to the Specification:

1. **Please delete all of the text from page 3, line 8, through page 5, line 10, and insert the following text in its place:**

In accordance with a first aspect of the present invention, there is provided a low equivalent series resistance (ESR) switch for selectively adding to a coil-capacitor circuit of a nuclear or electron resonance system, the switch comprising a pair of physically and electrically contacting members comprising a pair of contact surfaces and having mutually contact surface areas, said members being movable between a quiescent position where the contact surface areas are separated by a small distance and an active position where the contact surface areas are brought into physical and electrical contact to connect into the coil-capacitor circuit.

Preferably, the switch further comprises a plurality of insulated guide rods to guide the contacting members in and between said quiescent position and said active position.

Preferably, the contacting members are moved between the quiescent and active positions by the action of actuating means such as a pneumatic air piston system, motor or solenoid.

Preferably, the contacting members contacts are made from copper.

Preferably, the contacting members contacts are made or coated with gold.

Preferably, the contacting members contacts are made or coated with rhodium.

Preferably, the contacting members contacts are made or coated with silver.

Preferably, the contacting members contacts are made or coated with mercury and are contained within a vessel which prevents the escape of the mercury.

Preferably, the entire switch is contained within a vacuum vessel.

In accordance with a second aspect of the present invention, there is provided a method for selectively adding a low equivalent series resistance into a coil-capacitor circuit of a nuclear or electron resonance system, the method comprising:

In accordance with a second aspect of the present invention, there is provided a method for selectively adding a low equivalent series resistance into a coil-capacitor circuit of a nuclear or electron resonance system, the method comprising:

moving two large contact surface areas comprising a pair of contact surfaces between a quiescent position where the contact surface areas are separated by a small distance and an active position where the contact surface areas are brought into physical and electrical contact; and

wherein a low equivalent series resistance is disconnected from the coil-capacitor circuit when the contact surface areas are in the quiescent position and is connected into the coil-capacitor circuit when the contact surface areas are in the active position.

Preferably, the method further comprises guiding the contact surface areas between the quiescent position and the active position using a plurality of insulated guide rods

In accordance with a third aspect of the present invention, there is provided a low equivalent series resistance (ESR) switch for selectively adding to a coil-capacitor circuit of a nuclear or electron resonance system, the switch comprising a pair of physically and electrically contacting members comprising a pair of parallel bars and having mutually large contact surface areas, said members being movable between a quiescent position where the contact surface areas are separated by a small distance and an active position where the contact surface areas are brought into physical and electrical contact to connect into the coil-capacitor circuit.

Preferably, the switch further comprises a plurality of insulated guide rods to guide the parallel bars in and between said quiescent position and said active position.

In accordance with a fourth aspect of the present invention, there is provided a low equivalent series resistance (ESR) switch for selectively adding to a coil-capacitor circuit of a nuclear or electron resonance system, the switch comprising a pair of physically and electrically contacting members comprising a rotatable oval cross-section shaped rod disposed between two concave bars defining mutually large contact surface areas, said oval cross-section shaped rod being rotatable to an active position to physically and electrically connect with said concave bars and

further rotatable to a quiescent position to physically and electrically disconnect from said concave bars.

In accordance with a fifth aspect of the present invention, there is provided a low equivalent series resistance (ESR) switch for selectively adding to a coil-capacitor circuit of a nuclear or electron resonance system, the switch comprising a pair of physically and electrically contacting members comprising an elongated multi-pole switch having a pair of radially disposed and transversely spaced lugs and a pair of radial, externally mounted concave contacts, the lugs being rotatable relative to the contacts, whereby rotation of the switch to different angular positions allows different pairs of lugs to make physical and electrical contact with said contacts in discrete active positions, and also to disconnect the physical and electrical contact between said lugs and said contacts in discrete quiescent positions.

In accordance with a sixth aspect of the present invention, there is provided in a coil capacitor circuit of a nuclear or electron resonance system, a low equivalent series resistant (ESR) switch selectively added thereto, the switch in accordance with the first aspect of the present invention as hereinbefore described.

Brief Description of the Drawings

The invention will be better understood in the light of the following description of the best mode for carrying out the invention. The description is made with reference to Figures 2A to 5, and several specific embodiments of the best mode. The drawings accompanying the specification are described below:

Figure 1 shows the prior art arrangement for switching in extra capacitance into a resonant circuit;

Figure 2A shows a first embodiment of the low ESR switch;

Figure 2B shows a second embodiment of the low ESR switch;

Figure 2C shows the low ESR switch of Figure 2A inside a mercury containment vessel;

Figure 2D shows the low ESR switch of Figure 2A inside a vacuum vessel;

Figure 3A shows a fourth embodiment of the low ESR switch;

Figure 3B shows a fifth embodiment of the low ESR switch;

Figure 3C shows the low ESR switch of Figure 3A inside a mercury containment vessel;

Figure 3D shows the low ESR switch of Figure 3A inside a vacuum vessel;

Figure 4A shows a seventh embodiment of the low ESR switch;

Figure 4B shows an eighth embodiment of the low ESR switch;

Figure 4C shows the low ESR switch of Figure 4A inside a mercury containment vessel;

Figure 4D shows the low ESR switch of Figure 4A inside a vacuum vessel; and

Figure 5 is a flow chart schematically illustrating a method of using a low ESR switch.

2. **Please replace the paragraph beginning at page 5, line 25, with the following amended paragraph:**

The first embodiment of the best mode is directed towards an ESR switch of the form shown in Figure 2A. The switch comprises two flat parallel metallic bars 10 having a mutually large contact surface area, which in their quiescent position, are separated by a small distance. An actuating means 30 in the form of a pneumatic air piston system or a motor or solenoid (not shown in Figure 2A) drives the two bars together when contact is required. Alignment is maintained through insulated guide rods 20. In practice, this action normally occurs under the direction of a controlling computer.

3. **Please replace the paragraph beginning at page 6, line 11, with the following amended paragraph:**

For example in NQR, when switching from RDX to PETN frequencies, a large insertion of capacitance into the circuit is required, in the order of nanoFarads. The switch is closed by the computer, resulting in contact between the coil and the second bank of capacitors 25, resulting in the frequency being changed from near 5MHz to near 0.89MHz.

4. Please replace the paragraph beginning at page 6, line 19, with the following amended paragraph:

The second embodiment is the same as the first embodiment, except that parallel bars are coated with a metal 60, which prevents corrosion and/or prevents carbonisation of the metal surface. This is illustrated schematically in Figure 2B.

5. Please replace the paragraph beginning at page 7, line 3, with the following amended paragraph:

In another implementation of the embodiment, the parallel bars are coated with liquid mercury. The addition of mercury contacts prevents corrosion and carbonisation of the metal surface. The addition of mercury would require a containment vessel 70 to prevent the loss of mercury into the environment due to its hazardous health effects. This is illustrated schematically in Figure 2C.

6. Please replace the paragraph beginning at page 7, line 11, with the following amended paragraph:

The third embodiment is the same as the first, except that the entire switch is isolated inside a vacuum. The use of a vacuum chamber 80 around the metal bars prevents the oxidation of these bars allowing an increase in the useable lifetime of the switch. This is illustrated schematically in Figure 2D.

7. Please replace the paragraph beginning at page 7, line 15, with the following amended paragraph:

The fourth embodiment is similar to the preceding embodiments, except that it involves adding a low ESR switch of the type shown in Figure 3A to the coil-capacitor circuit of an NQR, NMR, electron spin resonance or MRI system.

8. Please replace the paragraph beginning at page 8, line 1, with the following amended paragraph:

The fifth embodiment is the same as the ~~eighth~~ fourth embodiment, except that the oval shaped cross section bars are coated with a metal 65 to prevent corrosion and carbonisation of the metal surface. This is illustrated schematically in Figure 3B.

9. Please replace the paragraph beginning at page 8, line 10, with the following amended paragraph:

In a further alternative implementation of the fifth embodiment, the oval cross-section shaped bars are coated with liquid mercury. The liquid mercury is sealed within a vessel 75. This is illustrated schematically in Figure 3C.

10. Please replace the paragraph beginning at page 8, line 13, with the following amended paragraph:

The sixth embodiment is substantially the same as the fourth or fifth embodiments, except that the switch is sealed within a vacuum chamber 85 to prevent corrosion of the switch. This is illustrated schematically in Figure 3D.

11. Please replace the paragraph beginning at page 8, line 16, with the following amended paragraph:

The seventh embodiment is similar to the preceding embodiments except that it involves adding a low ESR switch of the type shown in Figure 4A to the coil-capacitor circuit of a NQR, NMR, electron spin resonance or MRI system.

12. Please replace the paragraph beginning at page 9, line 9, with the following amended paragraph:

The eighth embodiment is the same as the seventh embodiment, except that the metallic lugs of the multi-pole switch are coated with a metal 66 to prevent corrosion and carbonisation of metal surface of the switch. This is illustrated schematically in Figure 4B.

13. Please replace the paragraph beginning at page 9, line 18, with the following amended paragraph:

In a further alternative implementation of the eighth embodiment, the metallic lugs of the multi-pole switch are coated with mercury. The mercury is contained within a sealed vessel 76. This is illustrated schematically in Figure 4C.

14. Please replace the paragraph beginning at page 9, line 21, with the following amended paragraph:

The ninth embodiment is substantially the same as the seventh or eighth embodiment, except that the multi-pole switch is isolated within a vacuum 86 to prevent corrosion. This is illustrated schematically in Figure 4D.